April 7, 1954

Dr. S. R. Luria
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Dear Lu:

Seymour transmitted your requested for a pair of Salmonella strains that would be appropriate, as he understood it, for a study of the effects of motility on the rate of phage adsopption. I have been thinking over what we should exgume that would best fit your needs, and avert some obvious traps. The main consideration, I thought, would be to ensure and be able to verify that motility was the only difference. Unfortunately, our methods for selecting motile strains are always likely to have some effects on the level of somatic antigen, presumably the receptor substance. This is a feature that is never easy to control in Salmonella anyhow.

On this basis, I would recommedd using as a non-motile strain one sufficiently unstable that you wpuld have no difficulty in reisolating motile variants at will. In addition, the flagella themselves might play some role in either hindering or facilitating adsorption, independently of their motility function. For this reason, I have selected a flagellated, non-motile ("paralyzed") strain, SW- 578, which can be compared with its motile cousin, SW- 575. The former is moderately unstable, and should be repurified from single colonies every now and then, but not to a degree at all likely to interfere with your experiments. As required, you can select for motile reversions from SW-578 with the help of "motility agar". I am also sending SW-573, also related to the other two, and which is a stable, non-flagellated variant (probably also carrying the "paralyzed" mutation as well).

You may be interested, if not already cognizant, that Strain C (E. coli NCTC 122) is moderately motile when grown at lower temperatures. I am trying to select an actively motile derivative, and if this is successful, I would imagine you would find this system more feasible than the Salmonella, as the T phages would be applicable. Would you be interested?

Please let me know if I have misconstrued your request, er can be of any other service.

Yours sincerely,

Joshua Lederberg